



# **EQN\*3150 Equine Exercise Physiology Laboratory**

Winter 2019

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - January 03, 2019

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## **1 Course Details**

### **1.1 Calendar Description**

This course is an additional laboratory component to complement EQN\*3050. Lab exercises focus on the practical application of theoretical knowledge to develop an understanding for the basic physiological principles of muscle contraction and fatigue, thermoregulation, energy utilization under differing exercise intensities, and how these principles can be applied to differential training strategies for equine athletes.

**Pre-Requisite(s):** ANSC\*3080, EQN\*2040, EQN\*2050

**Co-Requisite(s):** EQN\*3050

**Restriction(s):** Registration in BBRM.EQM

### **1.2 Course Description**

This course is an additional laboratory component to complement EQN\*3050. Lab exercises focus on the practical application of theoretical knowledge to develop an understanding for the basic physiological principles of muscle contraction and fatigue, thermoregulation, energy utilization under differing exercise intensities, and how these principles can be applied to differential training strategies for equine athletes.

### **1.3 Timetable**

Wednesday 8:30-11:20am

AnNu 110 unless otherwise stated in class

### **1.4 Final Exam**

No Final Exam

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## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:** Wendy Pearson  
**Email:** wpearson@uoguelph.ca  
**Telephone:** +1-519-824-4120 x53652  
**Office:** ANNU 227  
**Office Hours:** By appointment

### 2.2 Teaching Assistant(s)

**Teaching Assistant:** Shannon Stanley  
**Email:** sstanl02@uoguelph.ca  
**Office:** ANNU 217  
**Office Hours:** By appointment

**Teaching Assistant:** Anna Garland  
**Email:** garlanda@uoguelph.ca  
**Office:** ANNU 217  
**Office Hours:** By appointment

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## 3 Learning Resources

### 3.1 Recommended Resource(s)

**Equine Exercise Physiology: The Science of Exercise in the Athletic Horse (Textbook)**  
<https://www.sciencedirect.com/book/9780702028571/equine-exercise-physiology>  
Available online via University Library

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## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. understand and explain basic principles of muscle contraction and relaxation within a context of energetic inputs and differential training regimens
  2. define fundamental principles of energy demand, energy supply and energy utilization within muscle
  3. articulate the integration of major physiological systems, including cardiovascular, respiratory, musculoskeletal and gastrointestinal systems within the context of the equine athlete.
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## 5 Teaching and Learning Activities

### 5.1 Lab

#### Week 1

**Topic(s):** *Introduction to animal techniques in equine exercise physiology:*

safety around horses; weigh bridge vs weight tape; taking a rectal body temperature, heart rate, respiratory rate; BIA

#### Week 2

**Topic(s):** *Field Trip – First Line Training Centre - Exercise horses in an equine swimming pool*

**Lab Report #1 due**

#### Week 3

**Topic(s):** *Journal club #1*

**Lab Report #2 due - swimming**

#### Week 4

**Topic(s):** *Field trip – Tomiko Training Centre*

#### Week 5

**Topic(s):** Equine Biomechanics - Hoof strain testing (Jeff Thomason)

**Lab Report #3 due - Tomiko**

#### Week 6

**Topic(s):** Effect of boots and wraps on tendon temperature

**Lab Report #4 due - biomechanics**

**Week 7**

**Topic(s):** *Respiratory System (Video and Data Set)*

*<https://www.youtube.com/watch?v=20pYGHN95BU>*

**Assignment #1 due (Literature Review)**

**Lab Report #5 due - boots & wraps**

**Week 8**

**Topic(s):** *Journal club #2*

**Assignment #2 due:** Interview Assignments

**Lab Report #6 due - respiratory**

**Week 9**

**Topic(s):** **Assignment #3 due:** 15-min presentations

**Week 10**

**Topic(s):** *Journal Club #3*

**Week 11**

**Topic(s):** *Field Trip – Woodbine racetrack backstretch tour*

**Week 12**

**Topic(s):** TBD

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## **6 Assessments**

## 6.1 Assessment Details

### Lab Reports (42%)

**Date:** As noted on course schedule  
6 reports @ 7% each

Lab reports are completed for each lab and are due at the beginning of the next week's lab. Each lab report is provided in your lab manual and is worth 7% of your final mark.

### Journal Club (18%)

**Date:** as noted on course schedule  
3 journal clubs @ 6% each

Students will read assigned research papers (citations to be provided on courselink). They will prepare a 200 word lay-summary of each article, that includes the purpose of the study or review, the main findings and the practical implications and/or applications of the findings. Summaries will be due at the beginning of the Journal club lab. During the lab, we will have a critical discussion of each paper, and will identify strengths, limitations and future research questions which are raised by each paper.

*Journal club marks will comprise 30% from summaries and 70% from in-class participation in discussion.*

### Assignment #1 (20%)

**Date:** Week 7

**STUDENTS ARE STRONGLY ENCOURAGED TO MAKE AN APPOINTMENT WITH WRITING SERVICES IN THE LIBRARY PRIOR TO BEGINNING YOUR PAPER AND AFTER YOU HAVE PRODUCED A COMPLETE DRAFT.**

The assignment is designed to give students an opportunity to integrate knowledge reported in primary research papers. The literature review should be a state-of-the-art scientific review of what is known, *and not known*, about the physiological impact (both good and bad) of exercise in horses.

Students will be provided with a list of potential topics from which to choose. They will then prepare a detailed literature review, according to the instructions below.

**PLEASE FOLLOW INSTRUCTIONS CAREFULLY.**

- A minimum of 10 peer reviewed scientific research papers
  - Scientific review papers and text books may be used as resources but cannot be counted in your 10 research papers
- Proper referencing using the Equine Veterinary Journal style
- 8-10 pages (DO NOT EXCEED MAXIMUM PAGE LENGTH), 12 pt. times new roman font
  - Diagrams, tables and references can be in addition to the page count.
- **Subheadings must be used** to organize your paper, and format should follow that of a published review paper

### **Rubric for Literature Review**

#### **Title and Abstract (20/100)**

Briefly states the purpose and why this area of research is important. Abstracts should be approx 250-300 words, summarize the key points that the review makes, and have a single concluding statement. No references should be included in an abstract.

#### **Introduction (20/100)**

The introduction should get the reader's attention, introduce the main idea of the report, *and end with a strong thesis statement.*

#### **Body (50/100)**

- Use Headings / Subheadings to help organize the flow of topics and information
- Paragraphs should begin with a clear topic sentence, which contains an

important idea about your research topic. Supporting, detailed sentences should follow the topic sentence. The paragraph should end with a strong summary statement.

- Paragraphs should be arranged in the best possible order.
- Each section should end with a brief summary paragraph.
- Points to consider:
  - Are the topics stated in the thesis statement appropriately addressed in the report?
  - Did the student stay focused on the main topic and sub topics?
  - Are details used to explain and clarify the main issue/topic?
  - Is the information, presented by the student, appropriate?
  - Did the student adequately integrate research results?
  - Did the students provide sufficient research data to reach a clear conclusion regarding the topic?
  - Spelling checked? Punctuation checked? Capitalization checked? Grammar and usage checked?

### **Conclusions (5/100)**

The conclusion repeats the main part of the report and ends with a final, interesting sentence. The thesis statement is often restated here. Conclusion should not introduce any new references.

### **References (5/100)**

Format references using the style of the Equine Veterinary Journal

See: [http://onlinelibrary.wiley.com/journal/10.1001/\(ISSN\)2042-3306/homepage/ForAuthors.html](http://onlinelibrary.wiley.com/journal/10.1001/(ISSN)2042-3306/homepage/ForAuthors.html)

### **Assignment 2 (10%)**

**Date:** Week 8

The purpose of this assignment is to allow students to interact directly with professional

members of the equine community, and to develop an understanding of the impact of cardiovascular dysfunction or disease in performance horses. For this assignment, students will work in groups of 3- 4 students. Each group will be required to interview 3 professional persons who are actively engaged in the care and/or training of *competitive* athletic horses (e.g. racing standardbreds, racing thoroughbreds, competitive sport-horses, competitive trail horses, etc.). The interviewees may be veterinarians, researchers, trainers, or any other professionals engaged in equine sport. Each group will create a list of *at least* 12 questions for their interviewee, which are targeted towards understanding the incidence and impact of cardiovascular disease in horses. Questions must be reviewed and approved by your instructor prior to each interview. Group reports must include the names of all members, a summary of responses of each interviewee to each question, and a 1-page discussion of the groups' findings on the incidence and impact of cardiovascular disease, as well as types of cardiovascular conditions most often observed in competitive horses.

### **Assignment 3 (10%)**

**Date:** Week 9

The purpose of this assignment is to give students the opportunity to explore and integrate primary literature pertaining to the impact of exercise on a major physiological system in the horse, and to articulate their findings in a scientific-style presentation. Students will work in group of 3-4 students, and will prepare a 15-minute scientific presentation to the class during the allotted presentation day. Presentation style should follow that of a scientific presentation, and should include:

Title slide

- Title of talk
- all group members' names

Outline slide

- provide an outline of the major topics to be covered

Content slides

- be sure to include citations for research papers (LastName et al. XXXX)



### Summary slide

- highlight the main points in your content slides

### Take-home message slide

- one statement which summarizes the practical implications of your findings on the effect of exercise on gastrointestinal function

### References slide

- list of all scientific papers used in your content slides (should include at least 10)

Presentations should be prepared on PowerPoint, and must be 15 minutes, plus 5 minutes for questions. It is not necessary that all students in the group participate in the presentation of the slides, but all students in the group must contribute equally to the overall effort.

Grades for this assignment will be 50% instructor grade, 25% group member grade, and 25% selected peer graders.

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## 7 Course Statements

### 7.1 Policy on Late Assignments

All assignments and lab reports must be handed in by 11:59pm of the due date. Late assignments and/or lab reports will be deducted 20% per day beginning at 12am the day immediately following the due date. Any assignments not received within 3 days of the due date will not be accepted and will receive a grade of 0.

If you have medical or compassionate grounds for late submission of assignments, please meet with your instructor prior to the due date if possible, and documentation may be

required.

The relevant University policy is provided below.

Category	Grounds for Consideration	Consideration Granted By	Period of Consideration	Subsequent Appeal To
<b>Incomplete Course Work</b>	Medical Psychological Compassionate	Instructor	Same semester	Academic Review Sub-Committee Submitted as soon as possible, not later than the end of the following semester

#### **MEDICAL GROUNDS**

For academic consideration based on medical grounds a student may be asked to provide documentation for the period of the illness. The necessity for documentation will depend in part upon the length of the illness and the amount of work missed during this time. Such documentation will always be required in the event of a request for consideration beyond the grade submission deadline for the course and must be submitted to the program counsellor within five working days of the missed examination/course work deadline. If the medical situation results in missed semester work, the student should contact the instructor, presenting medical documentation where warranted. If the absence due to illness is of a duration that will affect a number of courses or completion of the semester's work, the student must contact the program counsellor for advice and consideration.

When the absence affects final examinations or final assignments the student should go to Student Health Services or a personal physician for documentation. **The student must submit their documentation to their program counsellor within five working days of the missed examination/course work deadline.**

## 8 University Statements

### 8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

### 8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

### 8.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for course registration are available in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

### 8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

### 8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

More information can be found on the SAS website  
<https://www.uoguelph.ca/sas>

## 8.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

## 8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## 8.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars  
<https://www.uoguelph.ca/academics/calendars>